

We claim:

1. A method for controlling a motor, the method comprising steps of:
  - (a) directing current to the motor of a spindle of a mass storage device; and
  - (b) modulating the current, in reference to an occurrence of interference in an interface between a head and a disc of the mass storage device.
2. The method of claim 1, wherein the modulating step (b) further comprises the step of:
  - (b)(i) modulating the current in reference to a predetermined profile.
3. The method of claim 2, wherein the modulating step (b)(1) further comprises the step of:
  - (b)(i)(1) modulating the current in reference to a predetermined non-linear profile.
4. The method of claim 3, wherein the profile represents a relationship between time and quantity of current, and wherein the modulating step (b)(1) further comprises the steps of:
  - (b)(i)(1) monitoring a lapse of time;
  - (b)(ii)(2) referencing the representation of a quantity of current in the profile, from the lapse of time; and
  - (b)(i)(3) modulating the current to the motor in reference to the representation of the quantity of current in the profile.
5. The method of claim 1, wherein the modulating step (b) further comprises the step of:
  - (b)(i) modulating the current in reference to a predicted occurrence of interference in the interface between a head and a disc of the mass storage

device that exceeds a predetermined threshold of interference in the interface between a head and a disc of the mass storage device.

6. The method of claim 5, wherein the modulating step (b)(1) further comprises the steps of:

- (b)(i)(1) monitoring a lapse of time;
- (b)(i)(2) comparing the lapse of time to the time of a predicted occurrence of interference in the interface between a head and a disc of the mass storage device that exceeds a predetermined threshold of interference in the interface between a head and a disc of the mass storage device; and
- (b)(i)(3) modulating the current in reference to the predicted occurrence.

7. The method of claim 1, wherein the modulating step (b) further comprises the step of:

- (b)(i) modulating the current in reference to a predetermined profile, wherein the predetermined profile reduces air-bearing instability.

8. The method of claim 1, wherein the modulating step (b) further comprises the step of:

- (b)(i) modulating the current in reference to a predetermined profile, wherein the predetermined profile reduces takeoff air-bearing instability.

9. The method of claim 1, wherein the modulating step (b) further comprises the step of:

- (b)(i) modulating the current during spin-up of the mass storage device.

10. The method of claim 1, wherein the modulating step (b) further comprises the step of:

(b)(i) modulating the current during spin-down of the mass storage device.

11. The method of claim 1, wherein the modulating step (b) further comprises the step of:

5 (b)(i) increasing the current, in reference to an occurrence of interference in the interface between a head and a disc of the mass storage device.

12. A method for generating a profile of modulated current of a spindle motor of a mass storage device, the method comprising steps of:

10 (a) receiving performance data of the mass storage device, the data including the quantity of current applied to the spindle motor at a plurality of discrete points in time, and including at least one performance measurement;

15 (b) determining a portion of the performance data that indicates a performance inadequacy that exceeds a predetermined threshold; and

(c) generating the profile in reference to the performance inadequacy and the performance data.

20 13. The method of claim 12, wherein the performance measurement further comprises air-bearing stability.

14. The method of claim 12, wherein the air-bearing stability further comprises takeoff air-bearing stability.

25 15. The method of claim 12, wherein the performance data includes a measurement of a drag and a measurement of speed, and the method further comprises:

(d) measuring the drag and speed; and

(e) burning the profile into the firmware of a processor of the mass storage device.

16. A method for dynamically modulating current based on dynamic performance data during operation of a disc storage device, the method comprising steps of:

- (a) determining interference between a head of the disc storage device and a disc of the disc storage device, in reference to a performance profile, and in reference to dynamic performance data during operation; and
- (b) modulating current to the disc in reference to the interference.

17. The method of claim 16, wherein during spin up of the disc, the determining step

(a) further includes:

- (a)(i) measuring the rotation speed of the disc at predetermined intervals; and
- (a)(ii) comparing the speed to a look up table of values in the profile, wherein the speed not meeting a predetermined value indicates interference.

18. The method of claim 16, wherein the determining step (a) further includes:

- (a)(i) measuring the time per revolution; and
- (a)(ii) comparing the time per revolution to an expected time in the profile; wherein not meeting the expected time is an indication of interference.

19. The method of claim 16, wherein the determining step (a) further includes:

- (a)(i) sampling the rate of change of speed; and
- (a)(ii) comparing the rate of change of speed to a last sample.

20. The method of claim 19, wherein the sampling step (a)(i) further comprises:

- (a)(i)(1) sampling the rate of change of speed at each revolution.

21. The method of claim 19, wherein the sampling step (a)(o) further comprises:

- (a)(i)(1) sampling the rate of change of speed at multiple revolutions.

22. The method of claim 19, wherein the sampling step (a)(i) further comprises:  
(a)(i)(1) sampling the rate of change of speed at sub-multiple revolutions.

23. An apparatus for controlling a spindle motor of a mass storage device, the  
5 apparatus comprising:

a recording medium;

a spindle motor operably attached to the recording medium of the mass storage  
device; and

a modulator that modulates current to the spindle motor in a manner that avoids  
10 anomalies in the performance of the mass storage device thereby reducing  
wear on a head and the recording medium, the modulator being operably  
coupled to the spindle motor.

24. The apparatus of claim 23, further comprising:

15 a predetermined profile, the profile including a plurality of representations of  
quantity of current and a corresponding plurality of times.

25. The apparatus of claim 24, wherein the modulator further comprises:

20 a clock device, wherein the clock device is a component of a microcontroller of  
the mass storage device;

a time monitor of a lapse of time, wherein the time monitor obtains the time from  
the clock device, and generates a time lapse from the time, the time  
monitor being operably coupled to the clock device;

25 a profile referencer, wherein the profile reference references the predetermined  
profile using the lapse of time to extract or receive a representation of a  
quantity of current in the profile, the profile referencer operably coupled to  
the time monitor; and

a controller of the current to the spindle motor in reference to the representation of the quantity of current, the controller operably coupled to the profile referencer.

5 26. The apparatus of claim 25, wherein the profile referencer identifies a particular quantity or level of current from the lapse of time as an index into the profile.

27. The apparatus of claim 25, wherein the mass storage device further comprises a disc drive.

10 28. An apparatus to generate a profile of modulated current of a spindle motor of a mass storage device, comprising:

a receiver of performance data of the mass storage device, wherein the data includes a quantity of current applied to the spindle motor at each of a plurality of discrete points in time, and wherein the data also includes at least one performance measurement;

a determiner of one or more portions of the performance data that indicate a performance inadequacy that exceeds a predetermined threshold or level, wherein the determiner is operably coupled to the receiver; and

20 a generator of the profile in reference to the performance inadequacy and the performance data, wherein the generator is operably coupled to the determiner.

25 29. An information handling system to control a spindle motor of a mass storage device of a mass storage device comprising:

a rotatable recording medium;

a spindle motor operably coupled to the rotating recording medium;

a processor operably coupled to the spindle motor;

a head operably coupled to the processor; and

means operative on the processor to modulate a current directed to the spindle motor, to reduce interference in an interface between the head and the rotatable recording medium.

- 5    30.    The information handling system of claim 29, wherein the means further comprises:

means operative on the processor to increase a current directed to the spindle motor, to reduce interference in an interface between the head and the rotatable recording medium.

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